PENDING CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) ~~In a wireless communication system having a plurality of antennas each directed to one of a plurality of coverage areas, a~~ A method for dynamically varying traffic channel sectorization within a spread spectrum communication system comprising:

receiving a first PN-modulated signal from a first sector;

receiving a second PN-modulated signal from a second sector adjacent to said first sector;

introducing a delay between ~~said~~ a pair of PN-modulated signals comprising the first PN-modulated signal and the second PN-modulated signal projected to adjacent coverage areas, whereby said pair of PN-modulated signals are decorrelated; and

summing a delayed second PN-modulated signal and the first PN-modulated signal.

2. (Previously Presented) The method as in claim 1, further comprising:

splitting the first PN-modulated signal into multiple parts; and

splitting the second PN-modulated signal into multiple parts.

3. (Previously Presented) The method as in claim 2, wherein summing further comprises:

summing one of the multiple parts of the first PN-modulated signal with one of the multiple parts of the second PN-modulated signal to form a first summation signal.

4. (Previously Presented) The method as in claim 3, wherein summing further comprises:

summing a second one of the multiple parts of the first PN-modulated signal with a second one of the multiple parts of the second PN-modulated signal to form a second summation signal.

5. (Original) The method as in claim 4, further comprising:

generating an In-phase component and a Quadrature component of the first summation signal; and

generating an In-phase component and a Quadrature component of the second summation signal.

6. (Original) The method as in claim 5, further comprising:

generating a despreading code;

despreading the In-phase component and the Quadrature component of the first summation signal with the despreading code;

offsetting the despreading code by a first phase delay to form a delayed despreading code; and

despreading the In-phase component and the Quadrature component of the second summation signal with the delayed despreading code.

7. (Currently Amended) A wireless infrastructure ~~element~~ for dynamically varying traffic channel sectorization within a spread spectrum communication system, comprising:

means for receiving a first PN-modulated signal from a first sector;

means for receiving a second PN-modulated signal from a second sector adjacent to said first sector;

means for introducing a delay between ~~said~~ a pair of PN-modulated signals comprising the first PN-modulated signal and the second PN-modulated signal projected to adjacent coverage areas, whereby said pair of PN-modulated signals are decorrelated; and

means for summing a delayed second PN-modulated signal and the first PN-modulated signal.

8. (Currently Amended) A wireless infrastructure ~~element~~ to provide dynamic user sectorization by decorrelating signals received from adjacent coverage areas, comprising:

a plurality of antenna elements, each antenna element associated with a coverage area of a wireless communication system;

a plurality of receive amplifiers, comprising delay elements operably connected to said plurality of antennas, wherein a decorrelating delay is introduced between said signals provided to said adjacent coverage areas, each receive amplifier coupled to one of the plurality of antenna elements;

a switch matrix coupled to the plurality of receive amplifiers; and

a plurality of summation networks coupled to the switch matrix and adapted to receive information from each of the plurality of receive amplifiers, wherein the plurality of receivers are operably connected to the plurality of summation networks.

9. (Previously Presented) The method of claim 1, further comprising:

varying the size of a set of user sectors between successive system operating periods, comprising:

introducing a delay between said pair of PN-modulated signals projected to adjacent coverage areas within a given user sector;

discriminating between said pair of PN-modulated signals; time-aligning said pair of PN-modulated signals; and despreading said pair of PN-modulated signals using a locally-generated replica of a PN long code.

10. (Previously Presented) The method according to claim 1, wherein said delay has a duration slightly longer than a period of a chip of a PN long code used to decorrelate said pair of PN-modulated signals.

11. (Withdrawn) A method of accommodating variations in user demand within a cell, comprising:

dynamically varying sectors of the cell.

12. (Withdrawn) The method of accommodating variations in user demand within a cell according to claim 11, wherein said step of dynamically varying sectors of the cell

comprises varying an allocation of traffic channels among various user sectors within the cell.

13. (Withdrawn) The method of accommodating variations in user demand within a cell according to claim 11, wherein said step of dynamically varying sectors of the cell comprises changing a geographic extent of user sectors based on demand.

14. (Withdrawn) The method of accommodating variations in user demand within a cell according to claim 11, wherein said step of dynamically varying sectors of the cell comprises altering a beam pattern by dynamically varying a number of fixed antenna beams used to carry traffic channels associated with said user sector.

15. (Withdrawn) The method of accommodating variations in user demand within a cell according to claim 13, wherein said step of dynamically varying sectors of the cell further comprises:

varying a number of traffic channels allocated to a particular user sector.

16. (Withdrawn) A base station communications transceiver, comprising:

a controller;

an antenna system operably connected to said controller;

at least one transmit/receive channel bank electromagnetically coupled to said antenna system, whereby said transmit/receive channel banks supply beam-forming

signals to said antenna system so as to sectorize a first cell into a plurality of user sectors, each of which has associated therewith a plurality of user traffic channels;

a control bus operably connected between said controller and said at least one transmit/receive channel bank, whereby statistics relating to channel use are conveyed to said controller by said at least one transmit/receive channel bank.

17. (Withdrawn) The base station communications transceiver according to claim 16, wherein each channel bank comprises at least one channel unit capable of facilitating communication with a particular user.

18. (Withdrawn) The base station communications transceiver according to claim 16, wherein said antenna system comprises at least one set of fixed-beam antenna elements; whereby said antenna system alters a beam pattern by dynamically varying a number of said fixed antenna beams used to carry traffic channels associated with a user sector.

19. (Withdrawn) The base station communications transceiver according to claim 16, wherein said base station communications transceiver is adapted to accommodate variations in user demand within a cell, by dynamically varying sectors of the cell.

20. (Withdrawn) The base station communications transceiver according to claim 19, wherein said base station communications transceiver is further adapted to dynamically varying sectors of the cell by varying an allocation of traffic channels among various user sectors within the cell.

21. (Withdrawn) The base station communications transceiver according to claim 19, wherein said base station communications transceiver is further adapted to dynamically varying sectors of the cell by changing a geographic extent of user sectors based on demand.

22. (Withdrawn) The base station communications transceiver according to claim 19, wherein said base station communications transceiver is further adapted to dynamically varying sectors of the cell by varying a number of traffic channels allocated to a particular user sector.

23. (Previously Presented) A base station receiver network configured to provide dynamic user sectorization by decorrelating delays between received signals from adjacent coverage areas, comprising:

a plurality of antennas;

a first plurality of receive amplifiers comprising a plurality of delay elements operably connected to said plurality of antennas, wherein said decorrelating delays are introduced between said received signals from said adjacent coverage areas;

at least one switch matrix operably connected to said first plurality of receive amplifiers, whereby information from user sectors are routed to users within said adjacent coverage areas;

a plurality of summation networks operably connected to said at least one switch matrix;

a plurality of receivers operably connected to said plurality of summation networks, whereby said received signals are downconverted and digitized into composite I and Q components;

a PN long code generator for providing a PN long code to said plurality of receivers; and

a plurality of phase delay elements operably connected to said plurality of receivers for offsetting said PN long code by a predetermined margin.

24. (Currently Amended) The base station receiver network according to claim 23, further comprising a second plurality of amplifiers operably connected between said plurality of receivers and said plurality of [[said]] summation networks.

25. (Previously Presented) The base station receiver network according to claim 23, wherein said plurality of receivers comprises at least one RAKE receiver.

26. (Previously Presented) The base station receiver network according to claim 23, wherein at least one of the plurality of delay elements is a surface acoustic wave filter.

27. (Previously Presented) The base station receiver network according to claim 23, wherein at least one of said decorrelating delays is equivalent to 768 chips.

28. (Previously Presented) The base station receiver network according to claim *25,* wherein said at least one RAKE receiver comprises a plurality of demodulators.

29. (Withdrawn) A base station transmitter configured to provide dynamic user sectorization by introducing delays between signals projected to any pair of adjacent coverage areas, comprising:

a plurality of transmitters, whereby baseband information signals to be transmitted over traffic channels associated with a plurality of user sectors are processed;

a PN long code generator for providing said long PN code to said transmitters operably connected to said plurality of transmitters;

a plurality of amplifiers operably connected to said plurality of transmitters;

a plurality of splitters operably connected to said plurality of amplifiers;

at least one switch matrix operably connected to said plurality of splitters, whereby information from user sectors are routed to users within said coverage areas;

a plurality of antenna drivers operably connected to said at least one switch matrix; and

a plurality of antennas operably connected to said plurality of antenna drivers, each of said plurality of antennas being operative to project a beam over one of the coverage areas.

30. (Withdrawn) The base station transmitter according to claim 29, wherein said antenna drivers comprise phase delay elements for offsetting said PN long codes by a predetermined margin.

31. (Withdrawn) The switch matrix according to claim 29, comprising a plurality of digital controlled attenuators.

32. (Withdrawn) The switch matrix according to claim 29, wherein said plurality of antennas are dual-mode antennas.

33. (Withdrawn) The base station transmitter according to claim 29, wherein said antenna drivers comprise phase equalizers.

34. (Withdrawn) The base station transmitter according to claim 29, further comprising at least one power combiner operably connected in series with a plurality of antenna cables, wherein said at least one power combiner is operably connected to said antenna drivers and said plurality of antenna cables is operably connected to said plurality of antennas.

35. (Withdrawn) The base station transmitter according to claim 29, further comprising at least one power combiner operably connected in between said plurality of amplifiers and said plurality of splitters.

36. (Withdrawn) The base station transmitter according to claim 30, wherein said phase delay element is a surface acoustic wave filter.

37. (Withdrawn) The switch matrix according to 32, wherein said dual mode antenna is a dual-mode resonant patch antenna.

38. (Withdrawn) The base station transmitter according to claim 34, wherein said antenna drivers comprise phase equalizers, wherein at least one of said phase equalizers may be adjusted until an output of said power combiner is optimized.

39. (Withdrawn) The base station transmitter according to claim 34, wherein said antenna drivers comprise phase delay elements for offsetting said PN long codes by a predetermined margin.

40. (Withdrawn) The base station transmitter according to claim *35,* wherein said antenna drivers comprise phase equalizers, wherein at least one of said phase equalizers may be adjusted until an output of said power combiner is optimized.

41. (Withdrawn) The base station transmitter according to claim 39, wherein said phase delay element is a surface acoustic wave filter.

42. (Currently Amended) The wireless infrastructure ~~element~~ of claim 7, further comprising:

means for splitting the first PN-modulated signal into multiple parts; and

means for splitting the second PN-modulated signal into multiple parts.

43. (Currently Amended) The wireless infrastructure ~~element~~ of claim 42, wherein the means for summing further sums one of multiple parts of the first PN-modulated signal with one of the multiple parts of the second PN-modulated signal to form a first summation signal.

44. (Currently Amended) The wireless infrastructure ~~element~~ of claim 43, wherein the means for summing further sums a second one of the multiple parts of the first PN-modulated signal with a second one of the multiple parts of the second PN-modulated signal to form a second summation signal.

45. (Currently Amended) The wireless infrastructure ~~element~~ of claim 44, further comprising:

means for generating an In-phase component and a Quadrature component of the first summation signal; and

means for generating an In-phase component and a Quadrature component of the second summation signal.

46. (Currently Amended) The wireless infrastructure ~~element~~ of claim 45, further comprising:

means for generating a despreading code;

means for despreading the In-phase component and the Quadrature component of the first summation signal with the despreading code;

means for offsetting the despreading code by a first phase delay to form a delayed despreading code; and

means for despreading the In-phase component and the Quadrature component of the second summation signal with the delayed despreading code.

47. (Currently Amended) The wireless infrastructure ~~element~~ of claim 7, further comprising:

means for varying the size of a set of user sectors between successive system operating periods for introducing a delay between said pair of PN-modulated signals projected to adjacent coverage areas within a given user sector;

means for discriminating between said pair of PN-modulated signals;

means for time-aligning said pair of PN-modulated signals; and

means for despreading said pair of PN-modulated signals using a locally-generated replica of a PN long code.

48. (Currently Amended) The wireless infrastructure ~~element~~ of claim 7, wherein said delay has a duration slightly longer than a period of a chip of a PN long code used to decorrelate said pair of PN-modulated signals.

49. (Currently Amended) A computer-readable medium including program code stored thereon~~, which when executed by at least one computer implement a method~~ comprising:

program code for receiving a first PN-modulated signal from a first sector;

program code for receiving a second PN-modulated signal from a second sector adjacent to said first sector;

program code for introducing a delay between ~~said~~ a pair of PN-modulated signals comprising the first PN-modulated signal and the second PN-modulated signal projected to adjacent coverage areas, whereby said pair of PN-modulated signals are decorrelated; and

program code for summing a delayed second PN-modulated signal and the first PN-modulated signal.

50. (Previously Presented) The computer-readable medium of claim 49, further comprising:

program code for splitting the first PN-modulated signal into multiple parts; and

program code for splitting the second PN-modulated signal into multiple parts.

51. (Previously Presented) The computer-readable medium of claim 50, wherein the program code for summing comprises:

program code for summing one of the multiple parts of the first PN-modulated signal with one of the multiple parts of the second PN-modulated signal to form a first summation signal.

52. (Previously Presented) The computer-readable medium of claim 51, wherein the program code for summing further comprises:

program code for summing a second one of the multiple parts of the first PN-modulated signal with a second one of the multiple parts of the second PN-modulated signal to form a second summation signal.

53. (Previously Presented) The computer-readable medium of claim 52, further comprising:

program code for generating an In-phase component and a Quadrature component of the first summation signal; and

program code for generating an In-phase component and a Quadrature component of the second summation signal.

54. (Previously Presented) The computer-readable medium of claim 53, further comprising:

program code for generating a despreading code;

program code for despreading the In-phase component and the Quadrature component of the first summation signal with the despreading code;

program code for offsetting the despreading code by a first phase delay to form a delayed despreading code; and

program code for despreading the In-phase component and the Quadrature component of the second summation signal with the delayed despreading code.

55. (Previously Presented) The computer-readable medium of claim 49, further comprising:

program code for varying the size of a set of user sectors between successive system operating periods, wherein the program code for varying comprises:

program code for introducing a delay between said pair of PN-modulated signals projected to adjacent coverage areas within a given user sector;

program code for discriminating between said pair of PN-modulated signals;

program code for time-aligning said pair of PN-modulated signals; and

program code for depreading said pair of PN-modulated signals using a locally-generated replica of a PN long code.

56. (Previously Presented) The computer-readable medium of claim 49, wherein said delay has a duration slightly longer than a period of a chip of a PN long code used to decorrelate said pair of PN-modulated signals.

57. (Currently Amended) A base station receiver ~~network~~ for dynamically varying traffic channel sectorization within a spread spectrum communication system comprising:

at least one antenna for receiving a first PN-modulated signal from a first sector and for receiving a second PN-modulated signal from a second sector adjacent to said first sector;

a delay element coupled to the at least one antenna for introducing a delay between ~~said~~ a pair of PN-modulated signals comprising the first PN-modulated signal and the second PN-modulated signal projected to adjacent coverage areas, whereby said pair of PN-modulated signals are decorrelated; and

a summation network coupled to the delay element for summing a delayed second PN-modulated signal and the first PN-modulated signal.

58. (Currently Amended) The base station receiver ~~network~~ of claim 57, further comprising:

at least one splitter coupled to the delay element for splitting the first PN-modulated signal into multiple parts, and for splitting the second PN-modulated signal into multiple parts.

59. (Currently Amended) The base station receiver ~~network~~ of claim 58, wherein the summation network further sums one of the multiple parts of the first PN-modulated signal with one of the multiple parts of the second PN-modulated signal to form a first summation signal.

60. (Currently Amended) The base station receiver ~~network~~ of claim 59, wherein the summation network further sums a second one of the multiple parts of the first PN-modulated signal with a second one of the multiple parts of the second PN-modulated signal to form a second summation signal.

61. (Currently Amended) The base station receiver ~~network~~ of claim 60, further comprising:

at least one diversity receiver for generating an In-phase component and a Quadrature component of the first summation signal, and for generating an In-phase component and a Quadrature component of the second summation signal.

62. (Currently Amended) The base station receiver ~~network~~ of claim 61, further comprising a PN code generator for generating a despreading code; and wherein the at least one diversity receiver further despreads the In-phase component and the Quadrature component of the first summation signal with the despreading code, offsets the despreading code by a first phase delay to form a delayed despreading code, and despreads the In-phase component and the Quadrature component of the second summation signal with the delayed despreading code.

63. (Currently Amended) The base station receiver ~~network~~ of claim 57, wherein the at least one antenna varies the size of a set of user sectors between successive system operating periods; and wherein the delay element further introduces a delay between said pair of PN-modulated signals projected to adjacent coverage areas within a given user sector; and further comprising a PN code generator for generating a PN long code to discriminate between said pair of PN-modulated signals, for time-aligning said pair of PN-modulated signals, and for despreading said pair of PN-modulated signals using a locally-generated replica of the PN long code.

64. (Currently Amended) The base station receiver ~~network~~ of claim 57, wherein said delay has a duration slightly longer than a period of a chip of a PN long code used to decorrelate said pair of PN-modulated signals.